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# GRAND CANYON

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## Aircraft Management Recommendation

December 1987





# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240



December 9, 1987

Honorable T. Allan McArtor  
Administrator  
Federal Aviation Administration  
800 Independence Avenue, S.W.  
Washington, D.C. 20591

Dear Mr. McArtor:

I am pleased to transmit my recommendations concerning restrictions on aircraft overflights at Grand Canyon National Park, pursuant to Section 3 of P.L. 100-91.

Congress required that these recommendations "...provide for the substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight." This legislation prohibits the flight of aircraft below the rim and requires the designation of flight-free zones within the park.

The recommendations I transmit today meet both the letter and the spirit of P.L. 100-91. They also provide direction for the studies that will form the basis of the report to Congress called for in Section 3.

The flight-free zones I am recommending encompass approximately 530,000 acres or 44 percent of the park. They cover a significant portion of backcountry use areas so that substantial restoration of the natural quiet should be achieved for more than 90 percent of backcountry users. In addition virtually all visitors who enjoy the grandeur of the canyon from the rim will now be able to do so without being disturbed by noise from overhead aircraft.

The corridors called for in my recommendations also achieve a balance by allowing for continued viewing of the canyon from aircraft. The legislative history of P.L. 100-91 makes it clear that Congress intended to continue to provide for the use of sightseeing aircraft. Seeing the park from the air is enjoyed by many park visitors. These recommendations allow for air tours of 30 minutes or more that encompass spectacular portions of the canyon.

The recommendations prohibit flying below the rim except for special circumstances specifically identified by Congress. The FAA Administrator makes the final determination of rim level. However, I have included suggested rim level definitions for your consideration.

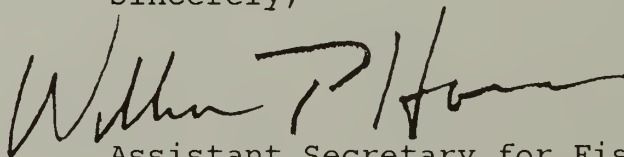
Congress called for a report within 2 years, from the implementation date of your final plan, that discusses the success of the plan in substantially restoring natural quiet and that makes recommendations for possible revisions of the aircraft management plan to be put in place as a result of the recommendations I am transmitting today. It is clear that Congress expects that during these 2 years we will do all that is practicable to obtain additional data so that we can make whatever adjustments are necessary to today's recommendations. All parties understand that the aircraft management plan that results from these recommendations is not final and recognize that while it is the best we can do today, modifications based on studies conducted over the next 2 years are highly likely.

It is imperative, therefore, that we obtain the best information possible during this period. The studies should be aimed at determining what level and kind of aircraft noise visitors find objectionable; and how many visitors are bothered by aircraft noise and under what conditions. We also should move toward establishing a noise standard so that the private sector knows what will be expected of it as it provides opportunities for visitors to enjoy the park from the air.

This letter transmits detailed recommendations and their rationale, and a map depicting flight-free zones. The entire record will be forwarded to you under separate cover to be included in the record compiled by FAA for its rulemaking.

We appreciate your assistance in addressing this complex issue and look forward to working with you as you develop your proposed rules governing aircraft overflights at Grand Canyon National Park.

Sincerely,

A handwritten signature in dark ink, appearing to read "William T. Horn". The signature is fluid and cursive, with a large initial "W" and a stylized "H".

Assistant Secretary for Fish  
and Wildlife and Parks

Enclosures

Grand Canyon National Park  
Aircraft Management Recommendation

INTRODUCTION

The requirement to develop this recommendation is found in Section 3 of the 1987 Public Law 100-91. The Secretary of the Interior shall submit to the Administrator, Federal Aviation Administration, recommendations regarding actions necessary for the protection of resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The recommendations shall provide for substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight. Except as provided in Section 1(c), the recommendations shall contain provisions prohibiting flight of aircraft below the rim of the Canyon, and shall designate flight-free zones. Such zones shall be flight free except for purposes of administration and for emergency operations, including those required for the transportation of persons and supplies to and from Supai Village and the lands of the Havasupai Indian Tribe of Arizona. The Administrator, after consultation with the Secretary, shall define the rim of the Canyon in a manner consistent with the purposes of this paragraph.

The legislative history of Public Law 100-91 provides further guidance on the contents of the recommendations from the Secretary. Flight-free zones are to be large areas where visitors can experience the park essentially free from aircraft sound intrusions, and where the sound from aircraft traveling adjacent to the flight-free zone is not detectable from most locations within the zone. The boundaries of the flight-free zones are to be drawn to maximize protection to backcountry users and other sensitive park resources. The legislative history also makes clear that the law is not intended to eliminate the air tour industry, and that air tours are an appropriate way to enjoy national parks when the resource and visitor protection mandates of the parks can accommodate such use.

It is estimated that more than 50,000 flights occur annually over the park. Of this total, an estimated 80 to 90 percent are relatively low-level tour flights with the balance being comprised of high-altitude commercial jets, military aircraft, National Park Service (NPS) contract aircraft and general aviation. Existing tour routes overfly most of the heavily-used backcountry areas. Many backcountry users express dissatisfaction with the noise intrusion and number of aircraft overflights at Grand Canyon National Park (GCNP).

From 1974 to 1980, FAA figures show that operations at the GCNP Airport, located two miles south of the GCNP boundary, increased approximately 300 percent. A significant expansion of airport facilities is currently occurring to accommodate present, as well as future demands.

The following recommendations contain specific approaches to address the GCNP aircraft overflight issue. The recommendations are based on public input, general and specific laws/policies, and best available scientific studies. The nature of the aircraft overflight issue at GCNP provides a complex situation which does not lend itself to a simple solution.



The GCNP aircraft management issue has received widespread national interest as evidenced by media coverage and two public review periods in fall 1985 and spring 1986 during which approximately 2,000 persons attended nine public meetings and almost 15,000 written comments were received. There has also been considerable public involvement in the development of Public Law 100-91 regarding overflights above park areas.

#### RECOMMENDATION OBJECTIVES

The objectives for aircraft management at Grand Canyon National Park are:

(1) To protect the public health, welfare, and safety, and the resources and natural environment within the park, including the substantial restoration of the natural quiet and visitor experience, in compliance with the 1975 Grand Canyon National Park Enlargement Act (Public Law 93-620) and with the 1987 Public Law 100-91.

(2) To provide an opportunity for a quality aerial viewing experience for park visitors through a balanced approach that avoids major economic dislocation to the existing air tour industry.

(3) To assist the Secretary of the Interior and the Secretary of Transportation in performing their responsibilities under Section 8 of Public Law 93-620 and Section 3 of Public Law 100-91 concerning minimum altitudes over NPS areas.

#### RECOMMENDATION ELEMENTS

##### Special Use Airspace Designation

Special Use Airspace (SUA) will be established over the area recognized geographically as the Grand Canyon of the Colorado River, including lands outside the political boundary of GCNP. Neighboring landowners or managers who may be affected by this action, may petition the Secretary of the Interior and the Secretary of Transportation for a resolution of any concerns. The SUA will be known as the "Grand Canyon Special Flight Rules Area" and will be classified as "Prohibited" in order to utilize commonly understood designations and clearly defined penalties for violations.

Three types of zones will be established within the Grand Canyon Special Flight Rules Area: (A) a Below Rim Level Zone, (B) flight-free zones, and (C) an Above Rim Level Zone. These three types of SUA zones are consistent with requirements established by Congress in Public Law 100-91. The boundaries of the Special Flight Rules Area and flight-free zones are shown on the attached map.

##### A. Below Rim Level Zone

We recommend, as provided for in Section 3, that the flight of aircraft shall be prohibited from the ground to rim level as defined below, except as otherwise provided in this recommendation. For the purposes of this recommendation, the Special Flight Rules Area is divided into four sections with rim level in each section being defined in terms of mean

sea level elevation (MSL) as follows: (1) 6,000 feet MSL for the eastern section from Lees Ferry to Boundary Ridge where the Grand Canyon visibly begins to widen, (2) 7,500 feet MSL from Boundary Ridge to Tuweep (outside the flight-free zones), (3) 6,500 feet MSL from the westernmost boundary of the flight-free zone near Tuweep to Diamond Creek and (4) 5,000 feet MSL for the western section from Diamond Creek to the Grand Wash Cliffs.

The rim level definitions above correspond to the approximate elevation of the top of the Kaibab Limestone formation which comprises the canyon rim throughout the park, except west of Diamond Creek on the south side of the Colorado River where there is no Kaibab Limestone. In that area, the rim is formed by the top of the Redwall Limestone. The rim outline on the attached map corresponds to these definitions.

The only types of flights allowed below rim level will be NPS administrative flights, flights required for the transportation of persons and supplies to and from Supai Village and the lands of the Havasupai Indian Tribe of Arizona, and flights which fly a direct route between a point on the North Rim outside of GCNP and locations on the Hualapai Indian Reservation (as designated by the tribe) and whose sole purpose is transporting individuals to or from boat trips on the Colorado River and any guide of such a trip. NPS administrative flights below rim level will normally include only emergency flights (search and rescue, medical assistance, public health and safety, etc.); however, flights for other administrative purposes may also be authorized where there is no other feasible means of transportation, or where aircraft use is determined to be the appropriate tool for a particular activity.

#### B. Flight-free Zones

Four flight-free zones will be established where the flight of aircraft will be prohibited from ground level to 14,500 feet MSL as shown on the attached map. These four flight-free zones encompass approximately 530,000 acres or 44 percent of the total park area. The only types of flights allowed in these flight-free zones will be the same types of flights with the same types of restrictions as will be allowed below rim level as defined above.

The purpose of flight-free zones is to provide a location where low-level flights do not occur and visitors can experience the park essentially free from aircraft sound intrusions. The boundaries of these flight-free zones have been drawn to maximize protection to backcountry users and other sensitive park resources and to ensure that sound from aircraft traveling adjacent to these flight-free zones is not detectable from most locations within the zone. The vertical boundary of 14,500 feet MSL is intended to preclude essentially all flights except high-altitude commercial jets. It is within these flight-free zones that substantial restoration of natural quiet is expected to be achieved. The four flight-free zones provide mitigation for the natural quiet and visitor experience of most backcountry users (over 90 percent based on 1986 user data) and essentially all day-use visitors.

All compass bearings in the following boundary descriptions are magnetic headings using a declination of 14 degrees east.

#### Desert View-Flight Free Area

The southwest corner of this zone begins at the park boundary south of Papago Point such that the flight corridor between this flight-free zone and the Bright Angel flight-free zone to the west is two miles wide. From the park's southern boundary, the flight-free zone boundary extends north-northeast on a magnetic heading of approximately 352 degrees to a point about one-half mile east of Unkar Rapids on the Colorado River. From that point, it turns east on a magnetic heading of approximately 063 degrees, passing approximately one-fourth mile south of Comanche Point and following that heading to a point three-fourths of a mile west of the park's eastern boundary. The flight-free zone boundary then turns due south on a magnetic heading of approximately 166 degrees passing just west of Cedar Mountain until it reaches the park's southern boundary and follows the park boundary back to the point of origin.

#### Bright Angel Flight-Free Zone

The southeast corner of this zone begins at the corner of the park boundary south of Moran Point. From that corner, the flight-free zone boundary extends northeast on a magnetic heading of approximately 352 degrees to Jupiter Temple and continues on a magnetic heading of approximately 357 degrees to Gunther Castle. From Gunther Castle, it turns northwest on a magnetic heading of approximately 279 degrees to Brady Peak, then due west on a magnetic heading of 256 degrees crossing the North Rim between Vista Encantadora and Point Imperial. The flight-free zone boundary passes over Greenland Lake and Lower Thompson Spring as it crosses the North Rim until it reaches the canyon rim at Dragon Creek. At that point, the flight-free zone boundary turns south-west on a magnetic heading of approximately 200 degrees passing just west of Claude Birdseye Point, over Boucher Rapids on the Colorado River, and west of Cocopa Point on the South Rim until it reaches the park's southern boundary. At the park boundary, the flight-free zone boundary turns southeast on a magnetic heading of approximately 112 degrees following the line of the Boundary Road until that line connects again with the park boundary (excluding a small section of park land from the flight-free zone). The flight-free zone boundary then follows the park boundary back to its point of origin, except that all park land within a five mile radius of the airport control tower in Tusayan is excluded from the flight-free zone.

#### Shinumo Flight-Free Zone

The southeast corner of this zone begins at the park boundary southwest of Mescalero Point such that the flight corridor between this flight-free zone and the Bright Angel flight-free zone to the east is two miles wide. From the southeast corner of the zone, the flight-free zone boundary extends northeast on a magnetic heading of approximately 020 degrees passing just west of Crystal Rapids on the Colorado River to the northern



tip of The Dragon. From that point on The Dragon, it turns northwest on a magnetic heading of approximately 324 degrees to the park's northern boundary at an intersection of several dirt roads six miles east of the corner of the park boundary near Powell Plateau. From that road intersection, the flight-free zone boundary then follows the park boundary due west on a magnetic heading of approximately 256 degrees to a small point of land which separates Castle Canyon from the canyon to the west of Castle Canyon containing Powell Spring. That small point is approximately one-fourth mile east of the corner of the park boundary near Powell Plateau. From that point, the flight-free zone boundary turns southwest on a magnetic heading of approximately 214 degrees crossing the northwest portion of Powell Plateau, crossing the Colorado River approximately two miles east of Forster Rapids, and following that line past the head of Forster Canyon to the park's southern boundary. The flight-free zone boundary then follows the park boundary back to its point of origin.

#### Toroweap to Thunder River Flight-Free Zone

From the confluence of Havasu Canyon (Cataract Canyon) with the Colorado River, the flight-free zone boundary travels northeast on a magnetic heading of approximately 065 degrees, passing just north of Deubendorff Rapids on the Colorado River and directly over Steamboat Mountain, then reaching the North Rim and the park's northern boundary at the southern part of Timp Point. From Timp Point, the flight-free zone boundary follows the park boundary west to a point in Toroweap Valley due east of the Tuweep Airport where the park boundary makes a north-south to east-west corner. At that corner, the flight-free zone boundary continues due south to a point approximately two and one-half miles south of that corner of the park boundary. It then turns due west for approximately three and one-half miles to the base of the Uinkaret Mountains, where it then turns due south to the Colorado River approximately one and three-quarter miles west of Lava Falls Rapids. The flight-free zone boundary then follows the Colorado River east to the flight-free zone's point of origin at the river's confluence with Havasu Creek.

#### C. Above Rim Level Zone

This recommendation with respect to NPS definition of rim level may require adjustment of the SFAR currently in effect over GRCA.

#### OTHER RECOMMENDATION ELEMENTS

The purpose of designated air corridors is to provide:

An opportunity to fly over Grand Canyon to view unsurpassed scenic vistas;

Approximately 30 minute to 60 minute tour opportunities from Grand Canyon Airport consistent with current tour packages; and

Avoidance of noise-sensitive locations within the park.

The easternmost two corridors between the flight-free zones will be 2 miles in width while the westernmost corridor (between Fossil Bay and north park boundary) varies from 2 to 9 miles in width. The 2-mile width of these corridors may necessitate some provisions by FAA to achieve separation of aircraft. This separation may be achieved by precluding passing of other aircraft within the corridor, designation of the corridor for one-way traffic only, and/or application of the hemispherical rule (FAR 91.109) within the corridor (where travel eastbound within the corridor would be at odd elevations plus 500 feet and travel westbound would be at even elevations plus 500 feet). The minimum elevations in these corridors, based on adjacent rim elevations, will be 7,500 feet MSL.

Approach and departure procedures for landing strips or airports adjacent to or within the Grand Canyon Special Flight Rules Area will be developed jointly by the FAA, NPS and other agencies and landowners in the vicinity of the landing strips or airports. Special provisions will be developed to ensure access to existing landing strips and airports, and to ensure reasonable aerial access of landowners or land managers to lands under their ownership or jurisdiction.

The current SFAR provides that except in an emergency, when necessary for takeoff and landing, or unless specifically authorized in writing by the FAA Las Vegas Flight Standards District Office, no person may operate an aircraft within 500 feet of any terrain or structure located within the Grand Canyon Special Flight Rules Area. We recommend that this provision be retained in any future SFAR revisions.

In order to facilitate aircraft use above rim level, we recommend FAA consider adoption of the hemispherical rule (FAR 91.109) for all aircraft traveling above the defined rim level outside the flight-free zones.

Within two years after the FAA final plan is implemented, the Secretary of the Interior shall submit a report to Congress on whether the plan has achieved the substantial restoration of natural quiet within the park. Additionally, this report will provide documentation concerning the level of compliance with plan provisions. The determination of compliance with plan provisions will be based on all Grand Canyon airspace activity as determined by FAA radar control data, monitoring studies, and any documented violations of Federal Aviation Regulations within established SUA areas. The information for this report will be gathered through scientific studies and aircraft monitoring activities. The data gathering program will be developed by NPS in partnership with FAA and will respond to specific measurable goals. If it is determined that measurable plan goals are not being met, then additional actions, measures and/or procedures for noise abatement and/or enforcement may be implemented at the end of the 2 year study period.

It is recommended that Federal Aviation Regulations (FAR's) be actively and aggressively enforced by the FAA under an education, engineering, and enforcement program jointly developed by the NPS and FAA. Education and information programs will be developed by FAA with assistance from NPS to educate all persons and groups interested in the aircraft issue concerning goals, elements and enforcement provisions of the plan. This will include

training sessions for pilots and NPS personnel, development and exchange of educational materials, a separate aeronautical chart for Grand Canyon, informational radio messages to pilots, information in publications, and contacts with the aviation community at all levels.

Due to the frequent deviations of high altitude jets from normal routes for sight-seeing purposes, it is recommended that FAA not authorize any deviations from normal flight plans and cruising altitudes for aircraft on high altitude jet routes over the Grand Canyon area for any reasons other than safety. In addition, it is recommended that FAA study the feasibility of relocating high altitude jet routes J110 and J76 away from the park.

In recognition of the continuing need for public input in the implementation of this complex plan as well as the existing 1984 Interagency Agreement among the NPS, FAA, and U.S. Fish and Wildlife Service regarding low-flying aircraft, a group consisting of representatives of the NPS, FAA, air tour operators, appropriate Congressional delegations, Aircraft Owners and Pilots Association, Office of Aircraft Services (Department of the Interior), affected land owners/land managers, environmental groups, and other applicable agencies will be established by the Superintendent, GCNP. The primary functions of this group will be to review and discuss information and monitoring data regarding implementation of the FAA final plan. Meetings of the group will be held no less than four times per year during the first 2 year phase of the plan.

NPS aircraft use will be minimized as stated in the GCNP Internal Aviation Management Plan.

It is recommended that the FAA work closely with the military to eliminate unnecessary flights over the park.

Three low altitude Victor Airways that currently cross the park would penetrate the recommended flight-free zones. To implement the recommendations in this document, V257, V293, and V210 must be modified to avoid the flight-free zones and preferably the entire Special Flight Rules Area. This may necessitate elimination or coincidence of one or more of these airways, and/or establishment of additional navigational aids. While the matter is studied by the FAA, it is recommended that V257 and V293 be temporarily relocated to travel between the Page VOR and the Tuba City VOR. Traffic to the Grand Canyon VOR could then continue from Tuba City to Grand Canyon on V210, which is recommended to be moved 5 miles south of its present location in the vicinity of the park.

Point Imperial and Toroweap are designated as noise sensitive areas under the FAA's current SFAR. We recommend that the FAA and air tour operators consider this factor when working to develop air tours routes.

It is recommended that the FAA study the feasibility of establishing positive radar control of the airspace above rim level as previously defined as well as approaches and departures at Grand Canyon Airport.

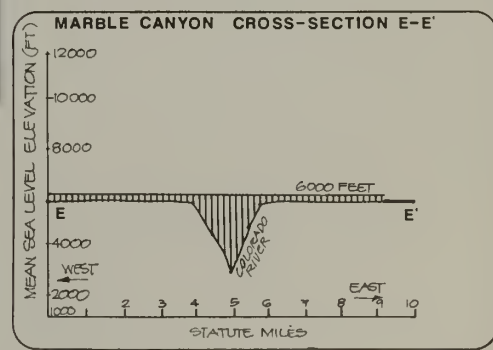
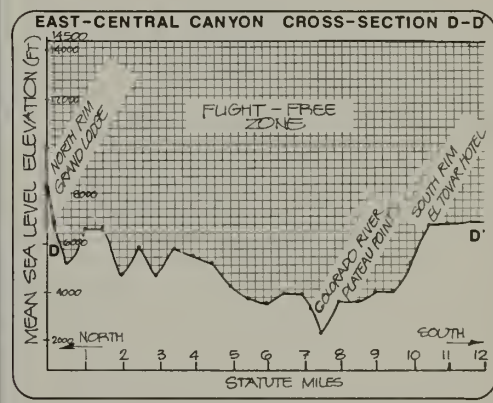
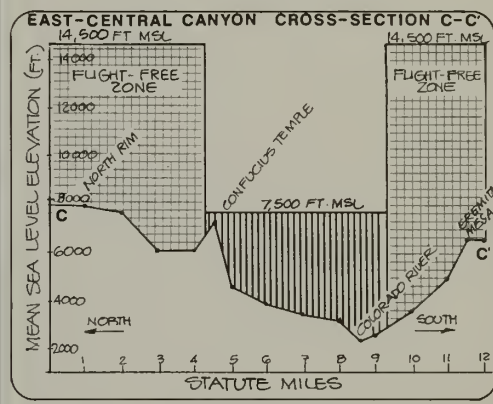
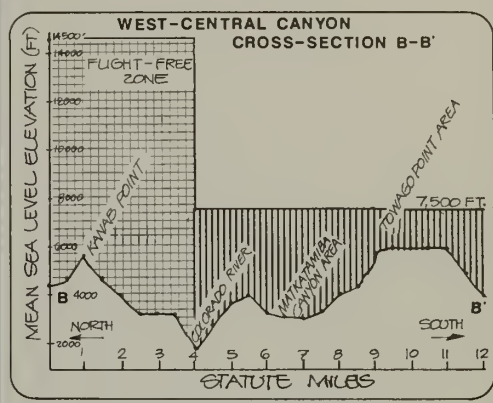
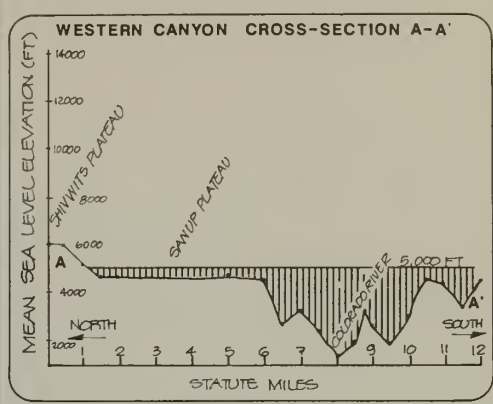
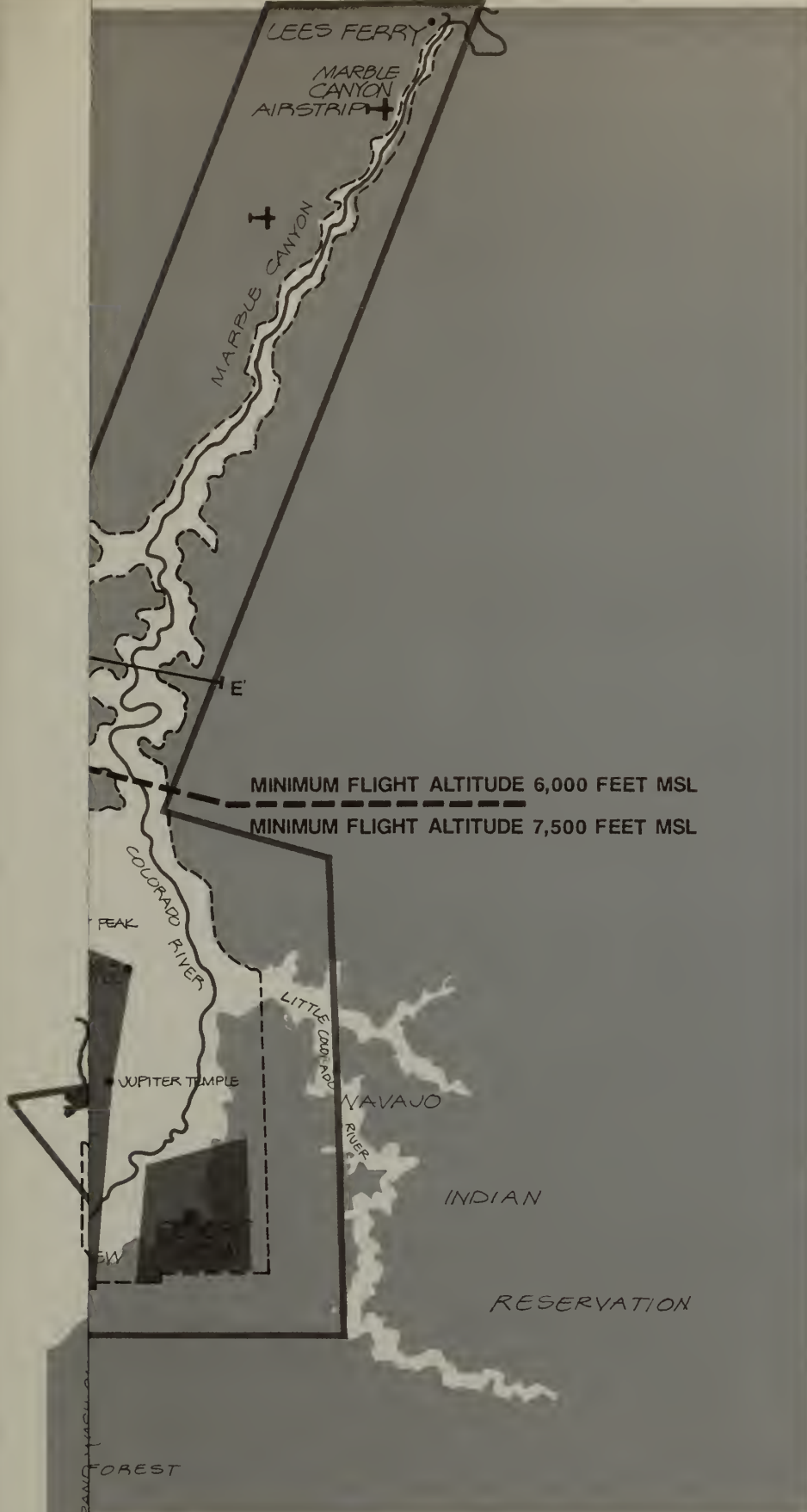
During the 2-year study period following implementation of the plan, FAA and NPS will conduct a series of joint studies. Topics for study include but are



not limited to: (1) measurement of aircraft and ambient sound levels within flight-free zones to determine if substantial restoration of natural quiet has been achieved, (2) analysis of opportunities to achieve better separation of aircraft traffic in the vicinity of GCNP Airport, and (3) studies of park user reaction to various sound levels directed at determining appropriate noise standards for different park use zones, and (4) an analysis of the use of "quiet" aircraft. This analysis will focus on two primary areas. The first area is a definition of what criteria should be used to define "quiet" aircraft technology. The second area of focus will be to establish the impact of the use of "quiet" aircraft on achieving the goal of substantial restoration of natural quiet. Based on research demonstrating that "quiet" aircraft can be effective in achieving this legislative mandate, a program will be developed for quiet aircraft utilization following the end of the 2 year study.

Exceptions to the restrictions contained in this recommendation will be allowed only in an emergency, in the case of inclement weather, or if otherwise necessary for safety of flight. The Manager of the FAA Las Vegas Flight Standards District Office and the Superintendent, GCNP will jointly develop procedures to address these exceptions.





GRAND CANYON  
AIRCRAFT MANAGEMENT RECOMMENDATION

LEGEND

- RIM OF GRAND CANYON
- GRAND CANYON NATIONAL PARK BOUNDARY
- SPECIAL FLIGHT RULES AREA BOUNDARY
- MINIMUM FLIGHT ALTITUDE ZONE BOUNDARY
- FLIGHT FREE ZONES  
NO FLIGHTS BELOW 14,500 FEET MEAN SEA LEVEL (MSL)
- CROSS-SECTION LOCATION

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